

# SEQUENCE LISTING

<110> Allen, Stephen M.  
Hitz, William D.  
Rafalski, J. Antoni

<120> SUCROSE TRANSPORT PROTEINS

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<151> April 9, 1998

<150> PCT/US99/07562

<151> April 7, 1999

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 <213> Zea mays

<400> 2

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Ala Leu Gln Leu Ser Leu Leu Thr Pro Tyr Val Gln Thr Leu Gly Leu
 50          55          60

Ser His Ala Leu Thr Ser Phe Met Trp Leu Cys Gly Pro Ile Ala Gly
 65          70          75          80

Leu Val Val Gln Pro Leu Val Gly Leu Tyr Ser Asp Arg Cys Thr Ser
          85          90          95

Arg Trp Gly Arg Arg Arg Pro Phe Ile Leu Thr Gly Cys Met Leu Ile
          100          105          110

Cys Val Ala Val Ile Val Val Gly Phe Ser Ser Asp Ile Gly Ala Ala
          115          120          125

Leu Gly Asp Thr Lys Glu His Cys Ser Leu Tyr His Gly Pro Arg Trp
          130          135          140

His Ala Ala Ile Val Tyr Val Leu Gly Phe Trp Leu Leu Asp Phe Ser
          145          150          155          160

Asn Asn Thr Val Gln Gly Pro Ala Arg Ala Met Met Ala Asp Leu Cys
          165          170          175

Asp His His Gly Pro Ser Ala Ala Asn Ser Ile Phe Cys Ser Trp Met
          180          185          190

Ala Leu Gly Asn Ile Leu Gly Tyr Ser Ser Gly Ser Thr Asn Asn Trp
          195          200          205

His Lys Trp Phe Pro Phe Leu Lys Thr Ser Ala Cys Cys Glu Ala Cys
          210          215          220

Ala Asn Leu Lys Gly Ala Phe Leu Val Ala Val Val Phe Leu Val Leu
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Cys Leu Thr Val Thr Leu Ile Phe Ala Lys Glu Val Pro Tyr Arg Ala
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Asn Glu Asn Leu Pro Thr Thr Lys Ala Gly Gly Glu Val Glu Thr Glu
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Pro Thr Gly Pro Leu Ala Val Leu Lys Gly Phe Lys Asp Leu Pro Pro
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Gly Met Pro Ser Val Leu Leu Val Thr Ala Ile Thr Trp Leu Ser Trp
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 340 345 350  
 Gly Phe Ser Ser Phe Leu Ile Glu Pro Met Cys Arg Lys Val Gly Pro  
 355 360 365  
 Arg Val Val Trp Val Thr Ser Asn Phe Met Val Cys Val Ala Met Ala  
 370 375 380  
 Ala Thr Ala Leu Ile Ser Phe Trp Ser Leu Arg Asp Tyr His Gly Tyr  
 385 390 395 400  
 Val Gln Asp Ala Ile Thr Ala Asn Ala Ser Ile Lys Ala Val Cys Leu  
 405 410 415  
 Val Leu Phe Ala Phe Leu Gly Val Pro Leu Ala Ile Leu Tyr Ser Val  
 420 425 430  
 Pro Phe Ala Val Thr Ala Gln Leu Ala Ala Thr Arg Gly Gly Gly Gln  
 435 440 445  
 Gly Leu Cys Thr Gly Val Leu Asn Ile Ser Ile Val Ile Pro Gln Val  
 450 455 460  
 Ile Ile Ala Leu Gly Ala Gly Pro Trp Asp Ala Leu Phe Gly Lys Gly  
 465 470 475 480  
 Asn Ile Pro Ala Phe Gly Val Ala Ser Ala Phe Ala Leu Val Gly Gly  
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 <213> Zea mays

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 Phe Ser Leu Leu Gly Leu Pro Leu Ser Ile Thr Tyr Ser Val Pro Phe  
 35 40 45  
 Ser Val Thr Ala Glu Leu Thr Ala Gly Thr Gly Gly Gly Gln Gly Leu  
 50 55 60  
 Ala Thr Gly Val Leu Asn Leu Ala Ile Val Val Pro Gln Ile Val Val  
 65 70 75 80  
 Ser Leu Gly Ala Gly Pro Trp Asp Ala Leu Tyr Gly Gly Gly Asn Thr  
 85 90 95  
 Pro Ala Phe Val Leu Ala Ser Val Phe Ser Leu Ala Ala Gly Val Leu  
 100 105 110  
 Ala Val Leu Lys Leu Pro Lys Leu Ser Asn Ser Tyr Gln Ser Ala Gly  
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 Phe His Gly Phe Gly  
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<210> 6
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Leu Leu Thr Pro Tyr Val Gln Thr Leu Gly Leu Ser His Ala Leu Thr
 35              40              45

Ser Phe Met Trp Leu Cys Gly Pro Ile Ala Gly Leu Val Val Gln Pro
 50              55              60

Leu Val Gly Leu Tyr Ser Asp Arg Cys Thr Ala Arg Trp Gly Arg Arg
 65              70              75              80

Arg Pro Phe Ile Leu Ile Gly Cys Met Leu Ile Cys Leu Ala Val Ile
          85              90              95

Val Val Gly Phe Ser Ser Asp Ile Gly Ala Ala Leu Gly Asp Thr Lys
          100              105              110

Glu His Cys Ser Leu Tyr His Gly Pro Arg Trp His Ala Ala Ile Val
 115              120              125

Tyr Val Leu Gly Phe Trp Leu Leu Asp Phe Ser Asn Asn Thr Val Gln
 130              135              140

Gly Pro Ala Arg Ala Met Met Ala Asp Leu Cys Gly His His Gly Pro
 145              150              155              160

Ser Ala Ala Asn Ser Ile Phe Cys Ser Trp Met Ala Leu Gly Asn Ile
          165              170              175

Leu Gly Tyr Ser Ser Gly Ser Thr Asn Asn Trp His Lys Trp Phe Pro
          180              185              190

Phe Leu Met Thr Asn Ala Cys Cys Glu Ala Cys Ala Asn Leu Lys Gly
 195              200              205

Ala Phe Leu Val Ala Val Val Phe Leu Ile Met Cys Leu Thr Ile Thr
 210              215              220

Leu Phe Phe Ala Lys Glu Val Pro Tyr Arg Gly Asn Gln Asn Leu Pro
 225              230              235              240

Thr Lys Ala Asn Gly Glu Val Glu Thr Glu Pro Ser Gly Pro Leu Ala
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 Ser Asn Ala Gln Ile Ser Ala Phe Asp Glu Gly Val Arg Val Gly Ser  
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 Phe Gly Leu Leu Leu Asn Ser Ile Val Leu Gly Phe Ser Ser Phe Leu  
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 Ile Glu Pro Met Cys Arg Lys Val Gly Pro Arg Val Val Trp Val Thr  
 340 345 350  
 Ser Asn Phe Met Val Cys Val Ala Met Ala Ala Thr Ala Leu Ile Ser  
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 Phe Trp Ser Leu Lys Asp Tyr His Gly Tyr Val Gln Asp Ala Ile Thr  
 370 375 380  
 Ala Ser Thr Ser Ile Lys Ala Val Cys Leu Val Leu Phe Ala Phe Leu  
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 Gly Val Pro Leu Ala Ile Leu Tyr Ser Val Pro Phe Ala Val Thr Ala  
 405 410 415  
 Gln Leu Ala Ala Thr Lys Gly Gly Gly Gln Gly Leu Cys Thr Gly Val  
 420 425 430  
 Leu Asn Ile Ser Ile Val Ile Pro Gln Val Ile Ile Ala Leu Gly Ala  
 435 440 445  
 Gly Pro Trp Asp Ala Leu Phe Gly Lys Gly Asn Ile Pro Ala Phe Gly  
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 <213> Oryza sativa

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<210> 8
<211> 400
<212> PRT
<213> Oryza sativa

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Thr Arg Leu Gly Ala Ile Ile Val Tyr Leu Val Gly Phe Trp Leu Leu
 35 40 45
Asp Val Gly Asn Asn Ala Thr Gln Gly Pro Cys Arg Ala Phe Leu Ala
 50 55 60
Asp Leu Thr Glu Asn Asp Pro Arg Arg Thr Arg Ile Ala Asn Ala Tyr
 65 70 75 80
Phe Ser Leu Phe Met Ala Leu Gly Asn Ile Leu Gly Tyr Ala Thr Gly
 85 90 95
Ala Tyr Ser Gly Trp Tyr Lys Ile Phe Pro Phe Thr Val Thr Pro Ser
 100 105 110
Cys Ser Ile Ser Cys Ala Asn Phe Lys Ser Ala Phe Leu Leu Asp Ile
 115 120 125
Ile Ile Leu Val Val Thr Thr Cys Ile Thr Val Ala Ser Val Gln Glu
 130 135 140
Pro Gln Ser Phe Gly Ser Asp Glu Ala Asp His Pro Ser Thr Glu Gln
 145 150 155 160
Glu Ala Phe Leu Trp Glu Leu Phe Gly Ser Phe Arg Tyr Phe Thr Leu
 165 170 175
Pro Val Trp Met Val Leu Ile Val Thr Ala Leu Thr Trp Ile Gly Trp
 180 185 190
Phe Pro Phe Ile Leu Phe Asp Thr Asp Trp Met Gly Arg Glu Ile Tyr
 195 200 205

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Arg Gly Ser Pro Asp Asp Pro Ser Ile Thr Gln Ser Tyr His Asp Gly  
210 215 220

Val Arg Met Gly Ser Phe Gly Leu Met Leu Asn Ser Val Leu Leu Gly  
225 230 235 240

Phe Thr Ser Ile Val Leu Glu Lys Leu Cys Arg Lys Trp Gly Ala Gly  
245 250 255

Leu Val Trp Gly Val Ser Asn Ile Leu Met Ala Leu Cys Phe Val Ala  
260 265 270

Met Leu Val Ile Thr Tyr Val Ala Lys Asn Met Asp Tyr Pro Pro Ser  
275 280 285

Gly Val Pro Pro Thr Gly Ile Val Ile Ala Ser Leu Val Val Phe Thr  
290 295 300

Ile Leu Gly Ala Pro Leu Ala Ile Thr Tyr Ser Ile Pro Tyr Ala Met  
305 310 315 320

Ala Ala Ser Arg Val Glu Asn Leu Gly Leu Gly Gln Gly Leu Ala Met  
325 330 335

Gly Ile Leu Asn Leu Ala Ile Val Ile Pro Gln Val Ile Val Ser Leu  
340 345 350

Gly Ser Gly Pro Trp Asp Gln Leu Phe Gly Gly Gly Asn Ala Pro Ala  
355 360 365

Phe Ala Val Ala Ala Ala Ala Ser Phe Ile Gly Gly Leu Val Ala Ile  
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<211> 2375  
<212> DNA  
<213> Oryza sativa

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tattcctttt gttttgtatg tctgttacc tgtactttgc tgaagagatc ccgctggaac 1080  
caacagatgc acaacgatta tctgattctg cgcctctcct gaatggttct agagatgata 1140  
acaatgcctc aatgaacct cgtaatggag cacttcctaa tggtcataca gatggaagca 1200  
atgtcccagc taactccaac gctgaggact ccaattcaaa cagagagaat gtcgaagttt 1260  
tcaatgatgg accaggagca gttttggtga atattttgac tagcatgagg catctacctc 1320



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attcagttgt	ccttggaatt	gggtccttcc	ttgttgatcc	actatgccga	ctgatgggtg	1560
ctagactggt	ttgggcaatc	agcaacttca	cagtgtttat	ctgcatgctg	gctacagcaa	1620
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aaggtctggc	aacaggagtc	ctgaaccttg	caatcgttgt	tccgcagata	gtagtgtcac	1860
taggagcagg	tccatgggat	gctctctttg	ggggagggaa	cgtccctgct	ttcgccttgg	1920
cttccgtttt	ctcactagga	gctggtgtcc	tgcggtcct	taagctaccc	aagctgccaa	1980
actcttacag	atctgctggg	ttccatggat	ttggctgagc	agaacaccag	ccgcatgggtg	2040
tgtaacattg	agaaatgcaa	ctccattttg	ccattcgttt	acagtgaat	gattcctttt	2100
acctactact	acaacagaat	aagctgaaaa	gatagagatt	aggatagaga	gctaggtaac	2160
tagtccagtt	aggttgatgt	gcatacaagg	caattggaag	gtgtaagagc	tgtatctact	2220
tttttgacag	aaaaatgtaa	gctctgcccg	aatgacatgg	cggatagatt	ttacaatgga	2280
tgtaatcatg	tactatatat	aacacgtttt	ggtcacagct	tgccaagttt	catgtatagt	2340
actgctacta	aaaaaaaaaa	aaaaaaaaaa	aaaaa			2375

<210> 10  
 <211> 667  
 <212> PRT  
 <213> Oryza sativa

<400> 10  
 Pro Ala Pro Ser Pro Arg Glu Ala Asp Gln Arg Ile Asn Gln Thr His  
 1 5 10 15  
 Lys His Thr Thr Arg Thr Gln Gln Gln Gly Arg Arg Gln Phe Pro Ile  
 20 25 30  
 Leu Pro Arg Pro Ala Ser Pro Arg Leu Ser Leu Thr Leu Gln Thr Pro  
 35 40 45  
 Thr Ser Asp Ala Ala Ser Leu Ala Pro Cys Pro Arg Arg Ser His Gln  
 50 55 60  
 Thr Leu Pro Asp Leu Arg Pro Ala Met Asp Ser Ala Ala Gly Gly Gly  
 65 70 75 80  
 Gly Leu Thr Ala Ile Arg Leu Pro Tyr Arg His Leu Arg Asp Ala Glu  
 85 90 95  
 Met Glu Leu Val Ser Leu Asn Gly Gly Thr Pro Arg Gly Gly Ser Pro  
 100 105 110  
 Lys Asp Pro Asp Ala Thr His Gln Gln Gly Pro Pro Ala Ala Arg Thr  
 115 120 125  
 Thr Thr Thr Arg Lys Leu Val Leu Ala Cys Met Val Ala Ala Gly Val  
 130 135 140  
 Gln Phe Gly Trp Ala Leu Gln Leu Ser Leu Leu Thr Pro Tyr Ile Gln  
 145 150 155 160  
 Thr Leu Gly Ile Asp His Ala Met Ala Ser Phe Ile Trp Leu Cys Gly  
 165 170 175  
 Pro Ile Thr Gly Phe Val Val Gln Pro Cys Val Gly Val Trp Ser Asp  
 180 185 190  
 Lys Cys Arg Ser Lys Tyr Gly Arg Arg Arg Pro Phe Ile Leu Ala Gly  
 195 200 205

Cys Leu Met Ile Cys Phe Ala Val Thr Leu Ile Gly Phe Ser Ala Asp  
 210 215 220  
 Leu Gly Tyr Ile Leu Gly Asp Thr Thr Glu His Cys Ser Thr Tyr Lys  
 225 230 235 240  
 Gly Ser Arg Phe Arg Ala Ala Ile Ile Phe Val Leu Gly Phe Trp Met  
 245 250 255  
 Leu Asp Leu Ala Asn Asn Thr Val Gln Gly Pro Ala Arg Ala Leu Leu  
 260 265 270  
 Ala Asp Leu Ser Gly Pro Asp Gln Cys Asn Ser Ala Asn Ala Ile Phe  
 275 280 285  
 Cys Thr Trp Met Ala Val Gly Asn Val Leu Gly Phe Ser Ser Gly Ala  
 290 295 300  
 Ser Gly Asn Trp His Lys Trp Phe Pro Phe Leu Met Thr Arg Ala Cys  
 305 310 315 320  
 Cys Glu Ala Cys Ser Asn Leu Lys Ala Ala Phe Leu Val Ala Val Val  
 325 330 335  
 Phe Leu Leu Phe Cys Met Ser Val Thr Leu Tyr Phe Ala Glu Glu Ile  
 340 345 350  
 Pro Leu Glu Pro Thr Asp Ala Gln Arg Leu Ser Asp Ser Ala Pro Leu  
 355 360 365  
 Leu Asn Gly Ser Arg Asp Asp Asn Asn Ala Ser Asn Glu Pro Arg Asn  
 370 375 380  
 Gly Ala Leu Pro Asn Gly His Thr Asp Gly Ser Asn Val Pro Ala Asn  
 385 390 395 400  
 Ser Asn Ala Glu Asp Ser Asn Ser Asn Arg Glu Asn Val Glu Val Phe  
 405 410 415  
 Asn Asp Gly Pro Gly Ala Val Leu Val Asn Ile Leu Thr Ser Met Arg  
 420 425 430  
 His Leu Pro Pro Gly Met Tyr Ser Val Leu Leu Val Met Ala Leu Thr  
 435 440 445  
 Trp Leu Ser Trp Phe Pro Phe Phe Leu Phe Asp Thr Asp Trp Met Gly  
 450 455 460  
 Arg Glu Val Tyr His Gly Asp Pro Asn Gly Asn Leu Ser Glu Arg Lys  
 465 470 475 480  
 Ala Tyr Asp Asn Gly Val Arg Glu Gly Ala Phe Gly Leu Leu Leu Asn  
 485 490 495  
 Ser Val Val Leu Gly Ile Gly Ser Phe Leu Val Asp Pro Leu Cys Arg  
 500 505 510  
 Leu Met Gly Ala Arg Leu Val Trp Ala Ile Ser Asn Phe Thr Val Phe  
 515 520 525  
 Ile Cys Met Leu Ala Thr Ala Ile Leu Ser Trp Ile Ser Phe Asp Leu  
 530 535 540

Tyr Ser Ser Lys Leu His His Ile Ile Gly Ala Asn Lys Thr Val Lys  
 545 550 555 560  
 Asn Ser Ala Leu Ile Val Phe Ser Leu Leu Gly Leu Pro Leu Ser Ile  
 565 570 575  
 Thr Tyr Ser Val Pro Phe Ser Val Thr Ala Glu Leu Thr Ala Gly Thr  
 580 585 590  
 Gly Gly Gly Gln Gly Leu Ala Thr Gly Val Leu Asn Leu Ala Ile Val  
 595 600 605  
 Val Pro Gln Ile Val Val Ser Leu Gly Ala Gly Pro Trp Asp Ala Leu  
 610 615 620  
 Phe Gly Gly Gly Asn Val Pro Ala Phe Ala Leu Ala Ser Val Phe Ser  
 625 630 635 640  
 Leu Gly Ala Gly Val Leu Ala Val Leu Lys Leu Pro Lys Leu Pro Asn  
 645 650 655  
 Ser Tyr Arg Ser Ala Gly Phe His Gly Phe Gly  
 660 665

<210> 11  
 <211> 1885  
 <212> DNA  
 <213> Glycine max

<400> 11  
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 tctctgaatt tctaagcctc tctcaaaata atggaggagc cacaaccagg acccagcccg 120  
 ttacgcaaaa tgattttggt gtcgtcaatg gcgcccggtg tccaattcgg gtgggcccta 180  
 cagctctccc ttctcacccc atatgttcaa accctaggcg tcccgcatgc ttgggcccta 240  
 tttatttggc tatgtggccc gatattctgg ctgctgggtg agcccattgt gggctacagc 300  
 agcgaccgat gccaatcccg ttctgggtcg cgccgtccct ttatcctagc cgggtctttg 360  
 gccgtcgcca ttgctgtgtt cctaattggt tacgcggccg atataggaca cgcgccaggc 420  
 gacaacctga cccaaaagac tcggccacgt gcagtggcga tcttcgtgat cgggttttgg 480  
 atcctcgacg tggctaacaa catgctccag ggtccatgcc gtgcctttct gggcgacctc 540  
 gctgccgggg atgagaaaaa gacaaaaggca gccaatgcct tcttctcttt ctcatggcc 600  
 gtcggcaaca tcttgggcta tgctgcggga tctacgaagc gcctccaccg cctcttccc 660  
 ttcacggaaa ccgaggcatg caacgtcttc tgcgcaaac tcaagagtgt cttcttcttc 720  
 gctatcgctc tcttgggtgt cctcaccacc ttggtgctga ttaccgtgaa agaaactccc 780  
 tacacgcaa aggagagaa ggaaaccgaa gatgcagaga agacacactt ctctgtcttc 840  
 tgccggagaa tttgtcttgc attcaagggg ctgaagaggc caatgtggat gttgatgttg 900  
 gtgaccgccg tgaactggat agcgtggttc ccttacttct tgttcgacac cgattggatg 960  
 ggtcgtgagg tgtacggtgg tgacgtgggg cagaaggcgt acgattcggg agttcatgca 1020  
 gggtctctag ggctaattgt gaatgcgggt gtgttggctg tgatgtcatt ggcaattgaa 1080  
 ccgttggggc gtgtggttgg gggaatcaag tgggttgggg gaatcggtta catcttgttg 1140  
 gctatatgct tgggaatgac cgttctcacc acaaagatcg ctgagcatga acgtcttctt 1200  
 aaccctgctt tgggtgggaa cccttccctc ggtatcaaag ttggttccat ggttttcttc 1260  
 tctgtccttg gaatccctct tgcgattact ttcagtgtcc catttgctct agcatctata 1320  
 tactccagca cttccggagc aggccaaggt ctatctttgg gtgtccttaa tattgcaatt 1380  
 gtcgttccac agatgatagt atcaaccata agtggacctt gggatgcctt gttcggcggt 1440  
 ggaaacttgc ctgcattcgt gttgggtgct gtggccgcgg tcgtgagtcg aatattagca 1500  
 gttcttctgc tgccaactcc aaagaaagct gatgagggtc gggcttctag cctcaacatg 1560  
 ggaagtgtgc attagtgtgt ctattatagg gctttacatg tttcactttc aaccttgctt 1620  
 tgatatggga aaaagaaact agtctttaga ttcgaagtgg gtgtgtgcat gtgtatatta 1680  
 ggtattagac atgggtttta gatgcttcca tagccacttt atgtccaagg acaatcatta 1740  
 atttgtaaac tttggtgcca caattatacc gaatagaaaa tcattaaaca tacatctttt 1800  
 tatttcacac attaaaaaaa tatcataata aatatatata ttatcatatt ataaaagaaa 1860  
 tatttgaaaa aaaaaaaaaa aaaaa 1885

<210> 12  
 <211> 494  
 <212> PRT  
 <213> Glycine max

<400> 12  
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 Ser Leu Leu Thr Pro Tyr Val Gln Thr Leu Gly Val Pro His Ala Trp  
 35 40 45  
 Ala Ser Phe Ile Trp Leu Cys Gly Pro Ile Ser Gly Leu Leu Val Gln  
 50 55 60  
 Pro Ile Val Gly Tyr Ser Ser Asp Arg Cys Gln Ser Arg Phe Gly Arg  
 65 70 75 80  
 Arg Arg Pro Phe Ile Leu Ala Gly Ser Leu Ala Val Ala Ile Ala Val  
 85 90 95  
 Phe Leu Ile Gly Tyr Ala Ala Asp Ile Gly His Ala Ala Gly Asp Asn  
 100 105 110  
 Leu Thr Gln Lys Thr Arg Pro Arg Ala Val Ala Ile Phe Val Ile Gly  
 115 120 125  
 Phe Trp Ile Leu Asp Val Ala Asn Asn Met Leu Gln Gly Pro Cys Arg  
 130 135 140  
 Ala Phe Leu Gly Asp Leu Ala Ala Gly Asp Glu Lys Lys Thr Lys Ala  
 145 150 155 160  
 Ala Asn Ala Phe Phe Ser Phe Phe Met Ala Val Gly Asn Ile Leu Gly  
 165 170 175  
 Tyr Ala Ala Gly Ser Tyr Asp Gly Leu His Arg Leu Phe Pro Phe Thr  
 180 185 190  
 Glu Thr Glu Ala Cys Asn Val Phe Cys Ala Asn Leu Lys Ser Cys Phe  
 195 200 205  
 Phe Phe Ala Ile Val Leu Leu Val Val Leu Thr Thr Leu Val Leu Ile  
 210 215 220  
 Thr Val Lys Glu Thr Pro Tyr Thr Pro Lys Ala Glu Lys Glu Thr Glu  
 225 230 235 240  
 Asp Ala Glu Lys Thr His Phe Ser Cys Phe Cys Gly Glu Leu Cys Leu  
 245 250 255  
 Ala Phe Lys Gly Leu Lys Arg Pro Met Trp Met Leu Met Leu Val Thr  
 260 265 270  
 Ala Val Asn Trp Ile Ala Trp Phe Pro Tyr Phe Leu Phe Asp Thr Asp  
 275 280 285  
 Trp Met Gly Arg Glu Val Tyr Gly Gly Asp Val Gly Gln Lys Ala Tyr  
 290 295 300

Asp Ser Gly Val His Ala Gly Ser Leu Gly Leu Met Leu Asn Ala Val  
 305 310 315 320  
 Val Leu Ala Val Met Ser Leu Ala Ile Glu Pro Leu Gly Arg Val Val  
 325 330 335  
 Gly Gly Ile Lys Trp Leu Trp Gly Ile Val Asn Ile Leu Leu Ala Ile  
 340 345 350  
 Cys Leu Gly Met Thr Val Leu Ile Thr Lys Ile Ala Glu His Glu Arg  
 355 360 365  
 Leu Leu Asn Pro Ala Leu Val Gly Asn Pro Ser Leu Gly Ile Lys Val  
 370 375 380  
 Gly Ser Met Val Phe Phe Ser Val Leu Gly Ile Pro Leu Ala Ile Thr  
 385 390 395 400  
 Phe Ser Val Pro Phe Ala Leu Ala Ser Ile Tyr Ser Ser Thr Ser Gly  
 405 410 415  
 Ala Gly Gln Gly Leu Ser Leu Gly Val Leu Asn Ile Ala Ile Val Val  
 420 425 430  
 Pro Gln Met Ile Val Ser Thr Ile Ser Gly Pro Trp Asp Ala Leu Phe  
 435 440 445  
 Gly Gly Gly Asn Leu Pro Ala Phe Val Leu Gly Ala Val Ala Ala Val  
 450 455 460  
 Val Ser Ala Ile Leu Ala Val Leu Leu Leu Pro Thr Pro Lys Lys Ala  
 465 470 475 480  
 Asp Glu Val Arg Ala Ser Ser Leu Asn Met Gly Ser Leu His  
 485 490

<210> 13  
 <211> 1041  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> unsure  
 <222> (1007)

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 ccaccaaaca caacaacaat ctctccaagc cttcctccct ccacacggag gctccgcccgc 120  
 cggaggccag tcccctccgg aagatcatgg tgggtggcctc catcgccgcc ggggtgcaat 180  
 tcgggtgggc cctacagctc tctctactta ccccttacgt ccaactgctg gggattcccc 240  
 acacttgggc cgccttcctc tggctctgctg gcccaatctc cggcatgctc gtccagccca 300  
 tcgtgggata ccacagcgac cgctgcacct cccgcttcgg ccgcccgcgc ccttctcatcg 360  
 ccgcccgcgc cctcgcgcgc gccatcgccg tcttcttat cggctacgcc gccgacctcg 420  
 gccacatggt cggcgactcc ctagccaaaa aaaccgcccc gcgccatcgc atcttcgttg 480  
 tcggcttctg gattctcgac gtgcgaaaca acatgctaca agggccctgc cgcgcctcc 540  
 tgggcgacct ctgcgccgga gaacaacgga aaacgcgaaa cgcaaacgcc ttctttctcct 600  
 tcttcatggc cgtcggaaac gtctctgggt acgcccgcggg ctcttacagc ggcctccaca 660  
 acgtcttccc tttcactaaa acaaaaagcat gtgatgttta ctgcggaat ttgaagagtt 720  
 gtttcttccc ctccatcgcg cttcttctca ctctctccac aatcgccttg acctacgtga 780  
 aggagaaaac ggtgtcgtca gagaaaacgg tgaggagttc ggtggaggag gatgggtccc 840  
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 tgtggatcct tctgttggtg acgtgtctga actgggattg cctggttcct tttttgctat 960  
 tcgacaccga ctgggattgg ggcgtgaggt gtacggaggg aaaattnggg gaaaggaaag 1020  
 ggtacgataa ggggttccgt t 1041

<210> 14  
 <211> 322  
 <212> PRT  
 <213> Glycine max

<220>  
 <221> UNSURE  
 <222> (311)

<220>  
 <221> UNSURE  
 <222> (321)

<400> 14

Met	Glu	Pro	Leu	Ser	Ser	Thr	Lys	His	Asn	Asn	Asn	Leu	Ser	Lys	Pro
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Ser	Ser	Leu	His	Thr	Glu	Ala	Pro	Pro	Pro	Glu	Ala	Ser	Pro	Leu	Arg
			20					25					30		
Lys	Ile	Met	Val	Val	Ala	Ser	Ile	Ala	Ala	Gly	Val	Gln	Phe	Gly	Trp
		35					40					45			
Ala	Leu	Gln	Leu	Ser	Leu	Leu	Thr	Pro	Tyr	Val	Gln	Leu	Leu	Gly	Ile
	50					55					60				
Pro	His	Thr	Trp	Ala	Ala	Phe	Ile	Trp	Leu	Cys	Gly	Pro	Ile	Ser	Gly
65					70					75					80
Met	Leu	Val	Gln	Pro	Ile	Val	Gly	Tyr	His	Ser	Asp	Arg	Cys	Thr	Ser
				85					90					95	
Arg	Phe	Gly	Arg	Arg	Arg	Pro	Phe	Ile	Ala	Ala	Gly	Ser	Leu	Ala	Val
			100					105					110		
Ala	Ile	Ala	Val	Phe	Leu	Ile	Gly	Tyr	Ala	Ala	Asp	Leu	Gly	His	Met
		115					120					125			
Phe	Gly	Asp	Ser	Leu	Ala	Lys	Lys	Thr	Ala	Pro	Arg	His	Arg	Ile	Phe
130						135					140				
Val	Val	Gly	Phe	Trp	Ile	Leu	Asp	Val	Ala	Asn	Asn	Met	Leu	Gln	Gly
145					150					155					160
Pro	Cys	Arg	Ala	Leu	Leu	Gly	Asp	Leu	Cys	Ala	Gly	Glu	Gln	Arg	Lys
				165					170					175	
Thr	Arg	Asn	Ala	Asn	Ala	Phe	Phe	Ser	Phe	Phe	Met	Ala	Val	Gly	Asn
			180					185					190		
Val	Leu	Gly	Tyr	Ala	Ala	Gly	Ser	Tyr	Ser	Gly	Leu	His	Asn	Val	Phe
		195					200					205			
Pro	Phe	Thr	Lys	Thr	Lys	Ala	Cys	Asp	Val	Tyr	Cys	Ala	Asn	Leu	Lys
	210					215					220				
Ser	Cys	Phe	Phe	Leu	Ser	Ile	Ala	Leu	Leu	Leu	Thr	Leu	Ser	Thr	Ile
225					230					235					240
Ala	Leu	Thr	Tyr	Val	Lys	Glu	Lys	Thr	Val	Ser	Ser	Glu	Lys	Thr	Val
				245					250					255	

Arg Ser Ser Val Glu Glu Asp Gly Ser His Gly Gly Met Pro Cys Phe  
260 265 270

Gly Gln Leu Phe Gly Ala Phe Arg Glu Leu Lys Arg Pro Met Trp Ile  
275 280 285

Leu Leu Leu Val Thr Cys Leu Asn Trp Asp Cys Leu Val Pro Phe Leu  
290 295 300

Leu Phe Asp Thr Asp Trp Xaa Gly Arg Glu Val Tyr Gly Gly Lys Ile  
305 310 315 320

Xaa Gly

<210> 15  
<211> 578  
<212> DNA  
<213> Vernonia mespilifolia

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gtttgttttg ccatgacggt ggtggtgacc aaaatggcag actctgaacg acagtttaag 120  
acgttgcccg acggtagcaa aaccgcggtg ccaccaggcg gcgacattaa agccggtgct 180  
ttgtcaattt ttgccgtcct cggtgccccca ctactgtgtga ctttcagtgt tccatgtgct 240  
cttgcaccaa tatttttctaa cagttcagga gctggacaag gtctatcact tgggtgtttg 300  
aatctagcaa tcgtcatacc acagatgttc gtatcagtac taagtggacc atgggacgca 360  
ctgttcggcg gtggaaactt accagcattt gtggttggag caatttcggc tgcagtaagt 420  
gggatattat cggtcaccat gcttccttcg ccacccccag atgtcgtact ttcaaagggt 480  
tccggagggt ggatgcatta gagagtaaat aactgccact caacacgtcc cgattgtgtc 540  
agattgggac atttaggacc aaaaaaaaaa aaaaaaaaaa 578

<210> 16  
<211> 166  
<212> PRT  
<213> Vernonia mespilifolia

<400> 16  
Ala Arg Gly Trp Leu Gly Gly Val Lys Arg Leu Trp Gly Gly Ile Asn  
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Phe Leu Leu Ala Val Cys Leu Ala Met Thr Val Val Val Thr Lys Met  
20 25 30  
Ala Asp Ser Glu Arg Gln Phe Lys Thr Leu Pro Asp Gly Ser Lys Thr  
35 40 45  
Ala Leu Pro Pro Gly Gly Asp Ile Lys Ala Gly Ala Leu Ser Ile Phe  
50 55 60  
Ala Val Leu Gly Ala Pro Leu Ala Val Thr Phe Ser Val Pro Cys Ala  
65 70 75 80  
Leu Ala Ser Ile Phe Ser Asn Ser Ser Gly Ala Gly Gln Gly Leu Ser  
85 90 95  
Leu Gly Val Leu Asn Leu Ala Ile Val Ile Pro Gln Met Phe Val Ser  
100 105 110  
Val Leu Ser Gly Pro Trp Asp Ala Leu Phe Gly Gly Gly Asn Leu Pro  
115 120 125  
Ala Phe Val Val Gly Ala Ile Ser Ala Ala Val Ser Gly Ile Leu Ser  
130 135 140

Phe Thr Met Leu Pro Ser Pro Pro Pro Asp Val Val Leu Ser Lys Val  
145 150 155 160

Ser Gly Gly Gly Met His  
165

<210> 17  
<211> 1062  
<212> DNA  
<213> Triticum aestivum

<400> 17  
ctggaatgcc gtcagtgtc ctcgtcacgc gcctcacctg gctgtcctgg ttccccttca 60  
tcctgtacga caccgactgg atgggtcgtg agatctacca cggtgacccc aagggaaacc 120  
ccgacgaggg caacgcgttc caggcaggtg tcagggccgg ggcgttcggc ctgctactca 180  
actcgggtcgt cctgggggttc agctcgttcc tgatcgagcc gctgtgcaag aggctaggcc 240  
cgcggtgtgt gtgggtgtca agcaacttcc tcgtctgcat ctccatggcc gccatttgca 300  
tcataagctg gtgggccact caggacctgc atgggtacat ccagcacgcc atcaccgcca 360  
gcaaggagat caagatcgtc tccctcgccc tcttcgcctt cctcggaatc cctctcgcca 420  
ttctgtacag tgtccctttc gcggtgacgg cgcagctggc ggcgaacaga ggcggtggcc 480  
aagggtcgtg cacgggcgtg ctgaacatcg ccatcgatg atccccagg atcatcgcg 540  
tgggggcggg gccgtgggac gagctgttcg gcaagggcaa catcccggcg ttcggcggtg 600  
cgtccgcctt cgcgctcatc ggcggcatcg tcggcatatt cctgctgccc aagatctcca 660  
ggcgccagtt ccgggcccgc agcgccggcg gtcactgacc cgcgccgcgc cggtcggcc 720  
tgagcatggc gaaggccgat cgcgccggcc cgaaggctcc agcccagctc ggcatttacc 780  
aaattttcgc ataggcgtaa ctagggggct ctcgcctaag gactccgtag agcagaataa 840  
gaattgtgag gaacctgtat gtgttggtgc tgtatgtgcg tgtaagtcag tgcgtgtagc 900  
ggaaaatgga cagaggaatg cgggcatcca tcgccggctg ggggtgtcgtc tttgggttgt 960  
gacttggtgt tagcaaacca aggtgatcaa gtgaggggaa aagaatggat gatgaacttt 1020  
cagcgacaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 1062

<210> 18  
<211> 232  
<212> PRT  
<213> Triticum aestivum

<400> 18  
Ala Gly Met Pro Ser Val Leu Leu Val Thr Gly Leu Thr Trp Leu Ser  
1 5 10 15  
Trp Phe Pro Phe Ile Leu Tyr Asp Thr Asp Trp Met Gly Arg Glu Ile  
20 25 30  
Tyr His Gly Asp Pro Lys Gly Thr Pro Asp Glu Ala Asn Ala Phe Gln  
35 40 45  
Ala Gly Val Arg Ala Gly Ala Phe Gly Leu Leu Leu Asn Ser Val Val  
50 55 60  
Leu Gly Phe Ser Ser Phe Leu Ile Glu Pro Leu Cys Lys Arg Leu Gly  
65 70 75 80  
Pro Arg Val Val Trp Val Ser Ser Asn Phe Leu Val Cys Ile Ser Met  
85 90 95  
Ala Ala Ile Cys Ile Ile Ser Trp Trp Ala Thr Gln Asp Leu His Gly  
100 105 110  
Tyr Ile Gln His Ala Ile Thr Ala Ser Lys Glu Ile Lys Ile Val Ser  
115 120 125  
Leu Ala Leu Phe Ala Phe Leu Gly Ile Pro Leu Ala Ile Leu Tyr Ser  
130 135 140



Val Pro Phe Ala Val Thr Ala Gln Leu Ala Ala Asn Arg Gly Gly Gly  
 145 150 155 160

Gln Gly Leu Cys Thr Gly Val Leu Asn Ile Ala Ile Val Ile Pro Gln  
 165 170 175

Val Ile Ile Ala Val Gly Ala Gly Pro Trp Asp Glu Leu Phe Gly Lys  
 180 185 190

Gly Asn Ile Pro Ala Phe Gly Val Ala Ser Ala Phe Ala Leu Ile Gly  
 195 200 205

Gly Ile Val Gly Ile Phe Leu Leu Pro Lys Ile Ser Arg Arg Gln Phe  
 210 215 220

Arg Ala Val Ser Gly Gly Gly His  
 225 230

<210> 19  
 <211> 2083  
 <212> DNA  
 <213> Triticum aestivum

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<210> 20  
 <211> 522

<212> PRT

<213> Triticum aestivum

<400> 20

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35 40 45  
Val Gln Tyr Gly Trp Ala Leu Gln Leu Ser Leu Leu Thr Pro Tyr Val  
50 55 60  
Gln Thr Leu Gly Leu Ser His Ala Leu Thr Ser Phe Met Trp Leu Cys  
65 70 75 80  
Gly Pro Ile Ala Gly Leu Val Val Gln Pro Cys Val Gly Leu Tyr Ser  
85 90 95  
Asp Lys Cys Thr Ser Arg Trp Gly Arg Arg Arg Pro Phe Ile Leu Thr  
100 105 110  
Gly Cys Ile Leu Ile Cys Ile Ala Val Val Val Val Gly Phe Ser Ala  
115 120 125  
Asp Ile Gly Ala Gly Leu Gly Asp Ser Lys Glu Glu Cys Ser Leu Tyr  
130 135 140  
His Gly Pro Arg Trp His Ala Ala Ile Val Tyr Val Leu Gly Phe Trp  
145 150 155 160  
Leu Leu Asp Phe Ser Asn Asn Thr Val Gln Gly Pro Ala Arg Ala Leu  
165 170 175  
Met Ala Asp Leu Ser Ala Gln His Gly Pro Ser Ala Ala Asn Ser Ile  
180 185 190  
Phe Cys Ser Trp Met Ala Leu Gly Asn Ile Leu Gly Tyr Ser Ser Gly  
195 200 205  
Ser Thr Asn Asn Trp His Lys Trp Phe Pro Phe Leu Arg Thr Arg Ala  
210 215 220  
Cys Cys Glu Ala Cys Ala Asn Leu Lys Gly Ala Phe Leu Val Ala Val  
225 230 235 240  
Leu Val Leu Ala Phe Cys Leu Val Ile Thr Val Ile Phe Ala Lys Glu  
245 250 255  
Ile Pro Tyr Lys Ala Ile Ala Pro Leu Pro Thr Lys Gly Asn Gly Gln  
260 265 270  
Val Glu Val Glu Pro Thr Gly Pro Leu Ala Val Phe Lys Gly Phe Lys  
275 280 285  
Asn Leu Pro Pro Met Pro Ser Val Leu Leu Val Thr Gly Leu Thr Trp  
290 295 300  
Leu Ser Trp Phe Pro Phe Ile Leu Tyr Asp Thr Asp Trp Met Gly Arg  
305 310 315 320

Glu Ile Tyr His Gly Asp Pro Lys Gly Thr Pro Asp Glu Ala Asn Ala  
 325 330 335  
 Phe Gln Ala Gly Val Arg Ala Gly Ala Phe Gly Leu Leu Leu Asn Ser  
 340 345 350  
 Val Val Leu Gly Phe Ser Ser Phe Leu Ile Glu Pro Leu Cys Lys Arg  
 355 360 365  
 Leu Gly Pro Arg Val Val Trp Val Ser Ser Asn Phe Leu Val Cys Leu  
 370 375 380  
 Ser Met Ala Ala Ile Cys Ile Ile Ser Trp Trp Ala Thr Gln Asp Leu  
 385 390 395 400  
 His Gly Tyr Ile Gln His Ala Ile Thr Ala Ser Lys Glu Ile Lys Ile  
 405 410 415  
 Val Ser Leu Ala Leu Phe Ala Phe Leu Gly Ile Pro Leu Ala Ile Leu  
 420 425 430  
 Tyr Ser Val Pro Phe Ala Val Thr Ala Gln Leu Ala Ala Lys Arg Gly  
 435 440 445  
 Gly Gly Gln Gly Leu Cys Thr Gly Val Leu Asn Ile Ala Ile Val Ile  
 450 455 460  
 Pro Gln Val Ile Ile Ala Val Gly Ala Gly Pro Trp Asp Glu Leu Phe  
 465 470 475 480  
 Gly Lys Gly Asn Ile Pro Ala Phe Gly Met Ala Ser Ala Phe Ala Leu  
 485 490 495  
 Ile Gly Gly Ile Val Gly Ile Phe Leu Leu Pro Lys Ile Ser Arg Arg  
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 Gln Phe Arg Ala Val Ser Gly Gly Gly His  
 515 520

<210> 21  
 <211> 2160  
 <212> DNA  
 <213> Triticum aestivum

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 cctcggcagg ctcatcctcg ccggcatggt cgccggcggc gtgcagtacg gatgggcgct 360  
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 tctgatggct gatttatcag cccagcatgg acccagtga gcaaatcaaa tcttctgttc 780  
 ttggatggca ctgggaaata tccatagata ctcatctggt tccacaaata actggcaca 840  
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 ggagataccg tacaaggcga ttgcgcccct cccaacaaag gccaatggcc aggttgaagt 1020  
 cgagcccacc gggcgctcg ccgtcttcaa aggttcaag aacttgctc ctggaatgcc 1080  
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tagcaaacca aggtgatcaa gtgaggggaa aagaatggat gatgaacttt cagcgacaaa 2100
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<210> 22
<211> 522
<212> PRT
<213> Triticum aestivum

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<400> 22
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Gly Gly Gly Gly Ala Gly Ala Gly Gly Ala Asp Ala Pro Ala Val Asp
 20          25          30

Ile Ser Leu Gly Arg Leu Ile Leu Ala Gly Met Val Ala Gly Gly Val
 35          40          45

Gln Tyr Gly Trp Ala Leu Gln Leu Ser Leu Leu Thr Pro Tyr Val Gln
 50          55          60

Thr Leu Gly Leu Ser His Ala Leu Thr Ser Phe Met Trp Leu Cys Gly
 65          70          75          80

Pro Ile Ala Gly Leu Val Val Gln Pro Cys Val Gly Leu Tyr Ser Asp
 85          90          95

Lys Cys Thr Ser Arg Trp Gly Arg Arg Arg Pro Phe Ile Leu Thr Gly
100          105          110

Cys Ile Leu Ile Cys Ile Ala Val Val Val Val Gly Phe Ser Ala Asp
115          120          125

Ile Gly Ala Ala Leu Gly Asp Ser Lys Glu Glu Cys Ser Leu Tyr His
130          135          140

Gly Pro Arg Trp His Ala Ala Ile Val Tyr Val Leu Gly Phe Trp Leu
145          150          155          160

Leu Asp Phe Ser Asn Asn Thr Val Gln Gly Pro Ala Arg Ala Leu Met
165          170          175

Ala Asp Leu Ser Ala Gln His Gly Pro Ser Ala Ala Asn Ser Ile Phe
180          185          190

Cys Ser Trp Met Ala Leu Gly Asn Ile Leu Gly Tyr Ser Ser Gly Ser
195          200          205

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Thr	Asn	Asn	Trp	His	Lys	Trp	Phe	Pro	Phe	Leu	Arg	Thr	Arg	Ala	Cys
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Cys	Glu	Ala	Cys	Ala	Asn	Leu	Lys	Gly	Ala	Phe	Leu	Val	Ala	Val	Leu
225					230					235					240
Phe	Leu	Ala	Phe	Cys	Leu	Val	Ile	Thr	Val	Ile	Phe	Ala	Lys	Glu	Ile
				245					250					255	
Pro	Tyr	Lys	Ala	Ile	Ala	Pro	Leu	Pro	Thr	Lys	Ala	Asn	Gly	Gln	Val
			260					265					270		
Glu	Val	Glu	Pro	Thr	Gly	Pro	Leu	Ala	Val	Phe	Lys	Gly	Phe	Lys	Asn
		275					280					285			
Leu	Pro	Pro	Gly	Met	Pro	Ser	Val	Leu	Leu	Val	Thr	Gly	Leu	Thr	Trp
290						295					300				
Leu	Ser	Trp	Phe	Pro	Phe	Ile	Leu	Tyr	Asp	Thr	Asp	Trp	Met	Gly	Arg
305					310					315					320
Glu	Ile	Tyr	His	Gly	Asp	Pro	Lys	Gly	Thr	Pro	Asp	Glu	Ala	Asn	Ala
				325					330					335	
Phe	Gln	Ala	Gly	Val	Arg	Ala	Gly	Ala	Phe	Gly	Leu	Leu	Leu	Asn	Ser
			340					345						350	
Val	Val	Leu	Gly	Phe	Ser	Ser	Phe	Leu	Ile	Glu	Pro	Leu	Cys	Lys	Arg
		355					360					365			
Leu	Gly	Pro	Arg	Val	Val	Trp	Val	Ser	Ser	Asn	Phe	Leu	Val	Cys	Leu
370						375					380				
Ser	Met	Ala	Ala	Ile	Cys	Ile	Ile	Ser	Trp	Trp	Ala	Thr	Gln	Asp	Leu
385					390					395					400
His	Gly	Tyr	Ile	Gln	His	Ala	Ile	Thr	Ala	Ser	Lys	Glu	Ile	Lys	Ile
				405					410					415	
Val	Ser	Leu	Ala	Leu	Phe	Ala	Phe	Leu	Gly	Ile	Pro	Leu	Ala	Ile	Leu
			420					425				430			
Tyr	Ser	Val	Thr	Phe	Ala	Val	Thr	Ala	Gln	Leu	Ala	Ala	Asn	Arg	Cys
		435					440					445			
Gly	Gly	Gln	Trp	Leu	Cys	Thr	Gly	Val	Leu	Asn	Ile	Ala	Ile	Ala	Ile
	450					455					460				
Pro	Gln	Val	Ile	Ile	Ala	Leu	Gly	Ala	Gly	Pro	Trp	Asp	Glu	Leu	Phe
465					470					475					480
Gly	Lys	Gly	Asn	Ile	Pro	Ala	Phe	Gly	Val	Ala	Ser	Ala	Phe	Ala	Leu
			485						490					495	
Ile	Gly	Gly	Ile	Val	Gly	Ile	Phe	Leu	Leu	Pro	Lys	Ile	Ser	Arg	Leu
			500					505					510		
Gln	Phe	Arg	Ala	Val	Ser	Gly	Gly	Gly	His						
		515					520								

<210> 23  
 <211> 2030  
 <212> DNA  
 <213> Triticum aestivum

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 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2030

<210> 24  
 <211> 563  
 <212> PRT  
 <213> Triticum aestivum

<400> 24  
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 20 25 30  
 Ala Cys Met Val Ala Ala Gly Val Gln Phe Gly Trp Ala Leu Gln Leu  
 35 40 45  
 Ser Leu Leu Thr Pro Tyr Ile Gln Thr Leu Gly Ile Asp His Ala Met  
 50 55 60  
 Ala Ser Phe Ile Trp Leu Cys Gly Pro Ile Thr Gly Phe Val Val Gln  
 65 70 75 80  
 Pro Cys Val Gly Val Trp Ser Asp Lys Cys Arg Ser Lys Tyr Gly Arg  
 85 90 95  
 Arg Arg Pro Phe Ile Leu Ala Gly Cys Val Leu Ile Cys Ala Ala Val  
 100 105 110

Thr	Leu	Val	Gly	Phe	Ser	Ala	Asp	Leu	Gly	Tyr	Met	Leu	Gly	Asp	Thr	115	120	125
Thr	Glu	His	Cys	Ser	Thr	Tyr	Lys	Gly	Leu	Arg	Tyr	Arg	Ala	Ala	Phe	130	135	140
Ile	Phe	Ile	Phe	Gly	Phe	Trp	Met	Leu	Asp	Leu	Ala	Asn	Asn	Thr	Val	145	150	155
Gln	Gly	Pro	Ala	Arg	Ala	Leu	Leu	Ala	Asp	Leu	Ser	Gly	Pro	Asp	Gln	165	170	175
Cys	Asn	Ser	Ala	Asn	Ala	Ile	Phe	Cys	Ser	Trp	Met	Ala	Val	Gly	Asn	180	185	190
Val	Leu	Gly	Phe	Ser	Ala	Gly	Ala	Ser	Gly	Asn	Trp	His	Lys	Trp	Phe	195	200	205
Pro	Phe	Leu	Met	Thr	Arg	Ala	Cys	Cys	Glu	Ala	Cys	Gly	Asn	Leu	Lys	210	215	220
Ala	Ala	Phe	Leu	Ile	Ala	Val	Val	Phe	Leu	Leu	Phe	Cys	Met	Ala	Val	225	230	235
Thr	Leu	Tyr	Phe	Ala	Glu	Glu	Ile	Pro	Leu	Glu	Pro	Lys	Asp	Ala	Gln	245	250	255
Gln	Leu	Ser	Asp	Ser	Ala	Pro	Leu	Leu	Asn	Gly	Ser	Arg	Asp	Asp	His	260	265	270
Asp	Ala	Ser	Ser	Glu	Gln	Thr	Asn	Gly	Gly	Leu	Ser	Asn	Gly	His	Ala	275	280	285
Asp	Ala	Asn	His	Val	Ser	Ala	Asn	Ser	Ser	Ala	Asp	Ala	Gly	Ser	Asn	290	295	300
Ser	Asn	Lys	Asp	Asp	Val	Glu	Ala	Phe	Asn	Asp	Gly	Pro	Gly	Ala	Val	305	310	315
Leu	Val	Lys	Ile	Leu	Thr	Ser	Met	Arg	His	Leu	Pro	Pro	Gly	Met	Tyr	325	330	335
Ser	Val	Leu	Leu	Val	Met	Ala	Leu	Thr	Trp	Leu	Ser	Trp	Phe	Pro	Phe	340	345	350
Phe	Leu	Phe	Asp	Thr	Asp	Trp	Met	Gly	Arg	Glu	Val	Tyr	His	Gly	Asp	355	360	365
Pro	Lys	Gly	Asn	Ala	Ser	Glu	Arg	Lys	Ala	Tyr	Asp	Asp	Gly	Val	Arg	370	375	380
Glu	Gly	Ala	Phe	Gly	Leu	Leu	Leu	Asn	Ser	Val	Val	Leu	Gly	Ile	Gly	385	390	395
Ser	Phe	Leu	Ile	Asp	Pro	Leu	Cys	Arg	Met	Ile	Gly	Ala	Arg	Leu	Val	405	410	415
Trp	Ala	Ile	Ser	Asn	Phe	Ile	Val	Phe	Ala	Cys	Met	Leu	Ala	Thr	Thr	420	425	430
Ile	Leu	Ser	Trp	Ile	Ser	Tyr	Asp	Leu	Tyr	Ser	Ser	Lys	Leu	Gln	His	435	440	445

Ile Val Gly Ala Asp Lys Thr Val Lys Thr Ser Ala Leu Ile Leu Phe  
 450 455 460  
 Ser Leu Leu Gly Leu Pro Leu Ser Ile Thr Tyr Ser Val Pro Phe Ser  
 465 470 475 480  
 Val Thr Ala Glu Leu Thr Ala Gly Thr Gly Gly Gln Gly Leu Ala  
 485 490 495  
 Thr Gly Val Leu Asn Leu Ala Ile Val Ala Pro Gln Ile Val Val Ser  
 500 505 510  
 Leu Gly Ala Gly Pro Trp Asp Lys Leu Leu Gly Gly Gly Asn Val Pro  
 515 520 525  
 Ala Phe Ala Leu Ala Ser Val Phe Ser Leu Ala Ala Gly Val Leu Ala  
 530 535 540  
 Val Ile Lys Leu Pro Lys Leu Ser Asn Asn Tyr Gln Ser Ala Gly Phe  
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 His Met Gly

<210> 25

<211> 501

<212> PRT

<213> Daucus carota

<400> 25

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 20 25 30  
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 35 40 45  
 Ser Leu Leu Thr Pro Tyr Val Gln Glu Leu Gly Ile Pro His Ala Trp  
 50 55 60  
 Ser Ser Ile Ile Trp Leu Cys Gly Pro Leu Ser Gly Leu Leu Val Gln  
 65 70 75 80  
 Pro Ile Val Gly His Met Ser Asp Gln Cys Thr Ser Lys Tyr Gly Arg  
 85 90 95  
 Arg Arg Pro Phe Ile Val Ala Gly Gly Thr Ala Ile Ile Leu Ala Val  
 100 105 110  
 Ile Ile Ile Ala His Ser Ala Asp Ile Gly Gly Leu Leu Gly Asp Thr  
 115 120 125  
 Ala Asp Asn Lys Thr Met Ala Ile Val Ala Phe Val Ile Gly Phe Trp  
 130 135 140  
 Ile Leu Asp Val Ala Asn Asn Met Thr Gln Gly Pro Cys Arg Ala Leu  
 145 150 155 160



Leu Ala Asp Leu Thr Gly Asn Asp Ala Arg Arg Thr Arg Val Ala Asn  
 165 170 175  
 Ala Tyr Phe Ser Leu Phe Met Ala Ile Gly Asn Val Leu Gly Tyr Ala  
 180 185 190  
 Thr Gly Ala Tyr Ser Gly Trp Tyr Lys Val Phe Pro Phe Ser Leu Thr  
 195 200 205  
 Ser Ser Cys Thr Ile Asn Cys Ala Asn Leu Lys Ser Ala Phe Tyr Ile  
 210 215 220  
 Asp Ile Ile Phe Ile Ile Ile Thr Thr Tyr Ile Ser Ile Ser Ala Ala  
 225 230 235 240  
 Lys Glu Arg Pro Arg Ile Ser Ser Gln Asp Gly Pro Gln Phe Ser Glu  
 245 250 255  
 Asp Gly Thr Ala Gln Ser Gly His Ile Glu Glu Ala Phe Leu Trp Glu  
 260 265 270  
 Leu Phe Gly Thr Phe Arg Leu Leu Pro Gly Ser Val Trp Val Ile Leu  
 275 280 285  
 Leu Val Thr Cys Leu Asn Trp Ile Gly Trp Phe Pro Phe Ile Leu Phe  
 290 295 300  
 Asp Thr Asp Trp Met Gly Arg Glu Ile Tyr Gly Gly Glu Pro Asn Gln  
 305 310 315 320  
 Gly Gln Ser Tyr Ser Asp Gly Val Arg Met Gly Ala Phe Gly Leu Met  
 325 330 335  
 Met Asn Ser Val Val Leu Gly Ile Thr Ser Val Leu Met Glu Lys Leu  
 340 345 350  
 Cys Arg Ile Trp Gly Ser Gly Phe Met Trp Gly Leu Ser Asn Ile Leu  
 355 360 365  
 Met Thr Ile Cys Phe Phe Ala Met Leu Leu Ile Thr Phe Ile Ala Lys  
 370 375 380  
 Asn Met Asp Tyr Gly Thr Asn Pro Pro Pro Asn Gly Ile Val Ile Ser  
 385 390 395 400  
 Ala Leu Ile Val Phe Ala Ile Leu Gly Ile Pro Leu Ala Ile Thr Tyr  
 405 410 415  
 Ser Val Pro Tyr Ala Leu Val Ser Thr Arg Ile Glu Ser Leu Gly Leu  
 420 425 430  
 Gly Gln Gly Leu Ser Met Gly Val Leu Asn Leu Ala Ile Val Val Pro  
 435 440 445  
 Gln Val Ile Val Ser Leu Gly Ser Gly Pro Trp Asp Gln Leu Phe Gly  
 450 455 460  
 Gly Gly Asn Ser Pro Ala Phe Val Val Ala Ala Leu Ser Ala Phe Ala  
 465 470 475 480  
 Ala Gly Leu Ile Ala Leu Ile Ala Ile Arg Arg Pro Arg Val Asp Lys  
 485 490 495

Ser Arg Leu His His  
500

<210> 26  
<211> 537  
<212> PRT  
<213> Oryza sativa

<400> 26

Met Ala Arg Gly Ser Gly Ala Gly Gly Gly Gly Gly Gly Gly Gly Gly  
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Gly Leu Glu Leu Ser Val Gly Val Gly Gly Gly Gly Ala Arg Gly Gly  
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Gly Gly Gly Glu Ala Ala Ala Ala Val Glu Thr Ala Ala Pro Ile Ser  
35 40 45  
Leu Gly Arg Leu Ile Leu Ser Gly Met Val Ala Gly Gly Val Gln Tyr  
50 55 60  
Gly Trp Ala Leu Gln Leu Ser Leu Leu Thr Pro Tyr Val Gln Thr Leu  
65 70 75 80  
Gly Leu Ser His Ala Leu Thr Ser Phe Met Trp Leu Cys Gly Pro Ile  
85 90 95  
Ala Gly Met Val Val Gln Pro Cys Val Gly Leu Tyr Ser Asp Arg Cys  
100 105 110  
Thr Ser Lys Trp Gly Arg Arg Arg Pro Tyr Ile Leu Thr Gly Cys Val  
115 120 125  
Leu Ile Cys Leu Ala Val Val Val Ile Gly Phe Ser Ala Asp Ile Gly  
130 135 140  
Tyr Ala Met Gly Asp Thr Lys Glu Asp Cys Ser Val Tyr His Gly Ser  
145 150 155 160  
Arg Trp His Ala Ala Ile Val Tyr Val Leu Gly Phe Trp Leu Leu Asp  
165 170 175  
Phe Ser Asn Asn Thr Val Gln Gly Pro Ala Arg Ala Leu Met Ala Asp  
180 185 190  
Leu Ser Gly Arg His Gly Pro Gly Thr Ala Asn Ser Ile Phe Cys Ser  
195 200 205  
Trp Met Ala Met Gly Asn Ile Leu Gly Tyr Ser Ser Gly Ser Thr Asn  
210 215 220  
Asn Trp His Lys Trp Phe Pro Phe Leu Lys Thr Arg Ala Cys Cys Glu  
225 230 235 240  
Ala Cys Ala Asn Leu Lys Gly Ala Phe Leu Val Ala Val Ile Phe Leu  
245 250 255  
Ser Leu Cys Leu Val Ile Thr Leu Ile Phe Ala Lys Glu Val Pro Phe  
260 265 270  
Lys Gly Asn Ala Ala Leu Pro Thr Lys Ser Asn Glu Pro Ala Glu Pro  
275 280 285

Glu Gly Thr Gly Pro Leu Ala Val Leu Lys Gly Phe Arg Asn Leu Pro  
 290 295 300  
 Thr Gly Met Pro Ser Val Leu Ile Val Thr Gly Leu Thr Trp Leu Ser  
 305 310 315 320  
 Trp Phe Pro Phe Ile Leu Tyr Asp Thr Asp Trp Met Gly Arg Glu Ile  
 325 330 335  
 Tyr His Gly Asp Pro Lys Gly Thr Asp Pro Gln Ile Glu Ala Phe Asn  
 340 345 350  
 Gln Gly Val Arg Ala Gly Ala Phe Gly Leu Leu Leu Asn Ser Ile Val  
 355 360 365  
 Leu Gly Phe Ser Ser Phe Leu Ile Glu Pro Met Cys Arg Lys Val Gly  
 370 375 380  
 Pro Arg Val Val Trp Val Thr Ser Asn Phe Leu Val Cys Ile Ala Met  
 385 390 395 400  
 Ala Ala Thr Ala Leu Ile Ser Phe Trp Ser Leu Lys Asp Phe His Gly  
 405 410 415  
 Thr Val Gln Lys Ala Ile Thr Ala Asp Lys Ser Ile Lys Ala Val Cys  
 420 425 430  
 Leu Val Leu Phe Ala Phe Leu Gly Val Pro Leu Ala Val Leu Tyr Ser  
 435 440 445  
 Val Pro Phe Ala Val Thr Ala Gln Leu Ala Ala Thr Arg Gly Gly Gly  
 450 455 460  
 Gln Gly Leu Cys Thr Gly Val Leu Asn Ile Ser Ile Val Ile Pro Gln  
 465 470 475 480  
 Val Val Ile Ala Leu Gly Ala Gly Pro Trp Asp Glu Leu Phe Gly Lys  
 485 490 495  
 Gly Asn Ile Pro Ala Phe Gly Leu Ala Ser Gly Phe Ala Leu Ile Gly  
 500 505 510  
 Gly Val Ala Gly Ile Phe Leu Leu Pro Lys Ile Ser Lys Arg Gln Phe  
 515 520 525  
 Trp Ser Val Ser Met Gly Gly Gly His  
 530 535

<210> 27  
 <211> 533  
 <212> PRT  
 <213> Ricinus communis

<400> 27  
 Met Gln Ser Ser Thr Ser Lys Glu Asn Lys Gln Pro Pro Ser Ser Gln  
 1 5 10 15  
 Pro His Pro Pro Pro Leu Met Val Ala Gly Ala Ala Glu Pro Asn Ser  
 20 25 30  
 Ser Pro Leu Arg Lys Val Val Met Val Ala Ser Ile Ala Ala Gly Ile  
 35 40 45

Gln	Phe	Gly	Trp	Ala	Leu	Gln	Leu	Ser	Leu	Leu	Thr	Pro	Tyr	Val	Gln
	50					55					60				
Leu	Leu	Gly	Ile	Pro	His	Thr	Trp	Ala	Ala	Phe	Ile	Trp	Leu	Cys	Gly
65					70					75					80
Pro	Ile	Ser	Gly	Met	Leu	Val	Gln	Pro	Ile	Val	Gly	Tyr	His	Ser	Asp
				85					90					95	
Arg	Cys	Thr	Ser	Arg	Phe	Gly	Arg	Arg	Arg	Pro	Phe	Ile	Ala	Ser	Gly
			100					105					110		
Ala	Ala	Phe	Val	Ala	Ile	Ala	Val	Phe	Leu	Ile	Gly	Tyr	Ala	Ala	Asp
		115					120					125			
Leu	Gly	His	Leu	Ser	Gly	Asp	Ser	Leu	Asp	Lys	Ser	Pro	Lys	Thr	Arg
130						135					140				
Ala	Ile	Ala	Ile	Phe	Val	Val	Gly	Phe	Trp	Ile	Leu	Asp	Val	Ala	Asn
145					150					155					160
Asn	Met	Leu	Gln	Gly	Pro	Cys	Arg	Ala	Leu	Leu	Ala	Asp	Leu	Ser	Gly
				165					170					175	
Thr	Ser	Gln	Lys	Lys	Thr	Arg	Thr	Ala	Asn	Ala	Leu	Phe	Ser	Phe	Phe
			180					185					190		
Met	Ala	Val	Gly	Asn	Val	Leu	Gly	Tyr	Ala	Ala	Gly	Ala	Tyr	Thr	His
		195					200					205			
Leu	Tyr	Lys	Leu	Phe	Pro	Phe	Thr	Lys	Thr	Thr	Ala	Cys	Asp	Val	Tyr
	210					215					220				
Cys	Ala	Asn	Leu	Lys	Ser	Cys	Phe	Phe	Ile	Ser	Ile	Val	Leu	Leu	Leu
225					230					235					240
Ser	Leu	Thr	Val	Leu	Ala	Leu	Ser	Tyr	Val	Lys	Glu	Lys	Pro	Trp	Ser
				245					250					255	
Pro	Asp	Gln	Ala	Val	Asp	Asn	Ala	Glu	Asp	Asp	Thr	Ala	Ser	Gln	Ala
			260					265					270		
Ser	Ser	Ser	Ala	Gln	Pro	Met	Pro	Phe	Phe	Gly	Glu	Ile	Leu	Gly	Ala
		275					280					285			
Phe	Lys	Asn	Leu	Lys	Arg	Pro	Met	Trp	Ile	Leu	Leu	Leu	Val	Thr	Cys
	290					295					300				
Leu	Asn	Trp	Ile	Ala	Trp	Phe	Pro	Phe	Leu	Leu	Phe	Asp	Thr	Asp	Trp
305					310					315					320
Met	Gly	Arg	Glu	Val	Tyr	Gly	Gly	Asp	Ser	Ser	Gly	Ser	Ala	Glu	Gln
				325					330					335	
Leu	Lys	Leu	Tyr	Asp	Arg	Gly	Val	Arg	Ala	Gly	Ala	Leu	Gly	Leu	Met
			340					345					350		
Leu	Asn	Ser	Val	Val	Leu	Gly	Phe	Thr	Ser	Leu	Gly	Val	Glu	Val	Leu
		355					360					365			
Ala	Arg	Gly	Val	Gly	Gly	Val	Lys	Arg	Leu	Trp	Gly	Ile	Val	Asn	Phe
	370					375					380				

Val Leu Ala Val Cys Leu Ala Met Thr Val Leu Val Thr Lys Gln Ala  
 385 390 395 400  
 Glu Ser Thr Arg Arg Phe Ala Thr Val Ser Gly Gly Ala Lys Val Pro  
 405 410 415  
 Leu Pro Pro Pro Ser Gly Val Lys Ala Gly Ala Leu Ala Leu Phe Ala  
 420 425 430  
 Val Met Gly Val Pro Gln Ala Ile Thr Tyr Ser Ile Pro Phe Ala Leu  
 435 440 445  
 Ala Ser Ile Phe Ser Asn Thr Ser Gly Ala Gly Gln Gly Leu Ser Leu  
 450 455 460  
 Gly Val Leu Asn Leu Ser Ile Val Ile Pro Gln Met Ile Val Ser Val  
 465 470 475 480  
 Ala Ala Gly Pro Trp Asp Ala Leu Phe Gly Gly Gly Asn Leu Pro Ala  
 485 490 495  
 Phe Val Val Gly Ala Val Ala Ala Leu Ala Ser Gly Ile Phe Ala Leu  
 500 505 510  
 Thr Met Leu Pro Ser Pro Gln Pro Asp Met Pro Ser Ala Lys Ala Leu  
 515 520 525  
 Thr Ala Ala Phe His  
 530  
 <210> 28  
 <211> 523  
 <212> PRT  
 <213> Vicia faba  
 <400> 28  
 Met Glu Pro Leu Ser Ser Thr Lys Gln Ile Asn Asn Asn Asn Asn Leu  
 1 5 10 15  
 Ala Lys Pro Ser Ser Leu His Val Glu Thr Gln Pro Leu Glu Pro Ser  
 20 25 30  
 Pro Leu Arg Lys Ile Met Val Val Ala Ser Ile Ala Ala Gly Val Gln  
 35 40 45  
 Phe Gly Trp Ala Leu Gln Leu Ser Leu Leu Thr Pro Tyr Val Gln Leu  
 50 55 60  
 Leu Gly Ile His His Thr Trp Ala Ala Tyr Ile Trp Leu Cys Gly Pro  
 65 70 75 80  
 Ile Ser Gly Met Leu Val Gln Pro Ile Val Gly Tyr His Ser Asp Arg  
 85 90 95  
 Cys Thr Ser Arg Phe Gly Arg Arg Arg Pro Phe Ile Ala Ala Gly Ser  
 100 105 110  
 Ile Ala Val Ala Ile Ala Val Phe Leu Ile Gly Tyr Ala Ala Asp Leu  
 115 120 125  
 Gly His Ser Phe Gly Asp Ser Leu Asp Gln Lys Val Arg Pro Arg Ala  
 130 135 140

Ile Gly Ile Phe Val Val Gly Phe Trp Ile Leu Asp Val Ala Asn Asn  
 145 150 155 160  
 Met Leu Gln Gly Pro Cys Arg Ala Leu Leu Gly Asp Leu Cys Ala Gly  
 165 170 175  
 Asn Gln Arg Lys Thr Arg Asn Ala Asn Ala Phe Phe Ser Phe Phe Met  
 180 185 190  
 Ala Val Gly Asn Val Leu Gly Tyr Ala Ala Gly Ala Tyr Ser Lys Leu  
 195 200 205  
 Tyr His Val Phe Pro Phe Thr Lys Thr Lys Ala Cys Asn Val Tyr Cys  
 210 215 220  
 Ala Asn Leu Lys Ser Cys Phe Phe Leu Ser Ile Ala Leu Leu Thr Val  
 225 230 235 240  
 Leu Ala Thr Ser Ala Leu Ile Tyr Val Lys Glu Thr Ala Leu Thr Pro  
 245 250 255  
 Glu Lys Thr Val Val Thr Thr Glu Asp Gly Gly Ser Ser Gly Gly Met  
 260 265 270  
 Pro Cys Phe Gly Gln Leu Ser Gly Ala Phe Lys Glu Leu Lys Arg Pro  
 275 280 285  
 Met Trp Ile Leu Leu Leu Val Thr Cys Leu Asn Trp Ile Ala Trp Phe  
 290 295 300  
 Pro Phe Leu Leu Phe Asp Thr Asp Trp Met Gly Lys Glu Val Tyr Gly  
 305 310 315 320  
 Gly Thr Val Gly Glu Gly His Ala Tyr Asp Met Gly Val Arg Glu Gly  
 325 330 335  
 Ala Leu Gly Leu Met Leu Asn Ser Val Val Leu Gly Ala Thr Ser Leu  
 340 345 350  
 Gly Val Asp Ile Leu Ala Arg Gly Val Gly Gly Val Lys Arg Leu Trp  
 355 360 365  
 Gly Ile Val Asn Phe Leu Leu Ala Ile Cys Leu Gly Leu Thr Val Leu  
 370 375 380  
 Val Thr Lys Leu Ala Gln His Ser Arg Gln Tyr Ala Pro Gly Thr Gly  
 385 390 395 400  
 Ala Leu Gly Asp Pro Leu Pro Pro Ser Glu Gly Ile Lys Ala Gly Ala  
 405 410 415  
 Leu Thr Leu Phe Ser Val Leu Gly Val Pro Leu Ala Ile Thr Tyr Ser  
 420 425 430  
 Ile Pro Phe Ala Leu Ala Ser Ile Phe Ser Ser Thr Ser Gly Ala Gly  
 435 440 445  
 Gln Gly Leu Ser Leu Gly Val Leu Asn Leu Ala Ile Val Ile Pro Gln  
 450 455 460  
 Met Phe Val Ser Val Leu Ser Gly Pro Trp Asp Ala Leu Phe Gly Gly  
 465 470 475 480

B

Gly Asn Leu Pro Ala Phe Val Val Gly Ala Val Ala Ala Leu Ala Ser  
485 490 495  
Gly Ile Leu Ser Ile Ile Leu Leu Pro Ser Pro Pro Pro Asp Met Ala  
500 505 510  
Lys Ser Val Ser Ala Thr Gly Gly Gly Phe His  
515 520